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# BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

**MAILED** 

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**GROUP 3600** 

Application Number: 10/643,831 Filing Date: August 19, 2003 Appellant(s): MCMURRAY ET AL.

Dana E. Stano For Appellant

**EXAMINER'S ANSWER** 

This is in response to the appeal brief filed 4/5/06 appealing from the Office action mailed 8/4/05.

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## (1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

## (2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

### (3) Status of Claims

The statement of the status of claims contained in the brief is correct.

## (4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

## (5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

## (6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

#### (7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

### (8) Evidence Relied Upon

6,073,560	Stone	6-2000
4,939,997	Hoffman	7-1990

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 6,481,356
 Gualandi
 11-2002

 5,263,418
 Dippold et al.
 11-1993

 5,361,701
 Stevens
 11-1994

### (9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

#### Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 2. Claims 1, 4, 7, 8, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Stone (US 6,073,560).

For claims 1 and 8, Stone discloses a sabot comprising: a compression section (214,212) defining a payload receiving chamber (240) at a forward end of the sabot for receiving a slug (50) therein, the compression section including a plurality to fins (220,221,223) defined by a combination of alternating ridges on an interior and an exterior surface thereof; and a solid section (216) wherein the compression section is adapted to at least partially collapse upon firing while remaining substantially intact to produce a volume change.

For claims 4 and 20, Stone further discloses the solid section includes a powder cup (215) section formed opposite the compression section.

For claim 7, Stone further discloses the sabot is axisymmetric.

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## Claim Rejections - 35 USC § 103

- 3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 4. Claims 2 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6,073,560) in view of Hoffman (US 4,939,997).

As described above, Stone discloses most of the claimed invention except for indicating that the compression section further includes a locking ring mounted within the payload receiving chamber for engaging the slug.

Hoffman teaches a similar firearm round as that of Stone in which Hoffman's firearm round having a projectile/slug (6) mounted within a sabot (1) wherein the sabot further comprises the use of a locking ring (7) so as to engage the projectile/slug therein (see Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include the use of a locking ring for the engagement of the projectile/slug within the sabot, in a similar manner as taught in Hoffman, since to do so would provide the locking ring as a securing device under centrifugal force and in response to the spin acting on the projectile/slug the locking ring will expand to facilitate the projectile/slug exiting from the sabot.

5. Claims 3, 9, 11-14, 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6,073,560) in view of Gualandi (US 6,481,356).

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For claims 3 and 27-30, as described above, Stone discloses most of the claimed invention except for indicating that the payload receiving chamber includes a post.

Gualandi teaches a similar firearm round as that of Stone in which Gualandi's firearm round having the payload receiving chamber includes a post (8,9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include the payload receiving chamber having a post, in a similar manner as taught in Gualandi, since to do so would provide for a gyroscopic stability and a mechanism actuating a high thrust pulse centering effect.

For claims 9, 11, 12 and 14, as described above, Stone discloses most of the claimed invention except for indicating that the slug comprises a nose, a driving band adjacent the nose and a stem connected to the driving band, and wherein the stem of the slug includes a post cavity, and wherein the payload receiving chamber of the sabot includes a post fitted within the post cavity of the slug, and wherein the stem has a diameter less than a diameter of the driving band. Gualandi teaches a similar firearm round as that of Stone in which Gualandi's firearm round having the slug (7) comprises a nose, a driving band adjacent the nose and a stem connected to the driving band, and wherein the stem of the slug includes a post cavity (the areas where posts 8 & 9 are located), and wherein the payload receiving chamber of the sabot includes a post (8,9) fitted within the post cavity of the slug, and wherein the stem has a diameter less than a diameter of the driving band (see Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm

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round of Stone so as to include the firearm round having the slug comprises a nose, a driving band adjacent the nose and a stem connected to the driving band, and wherein the stem of the slug includes a post cavity, and wherein the payload receiving chamber of the sabot includes a post fitted within the post cavity of the slug, in a similar manner as taught in Gualandi, since to do so would provide for a gyroscopic stability as well as a high thrust pulse centering effect.

For claim 13, as described above, Stone discloses most of the claimed invention except for indicating that the driving band includes a length less than about 25% of the overall diameter of the firearm round. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the driving band includes a length less than about 25% of the overall diameter of the firearm round, since it has been held where routine testing and general experimental conditions are present, discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Furthermore, since applicant did not provide a reason or an advantage as to why the driving band has to be in a length less than about 25% of the overall diameter of the firearm round, it is believe that through trial and error in manufacturing procedure that one comes up with this value to meet the require design criteria for manufacturing of a firearm round.

6. Claims 6, 10, 15, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6,073,560) in view of Dippold et al. (US 5,263,418).

For claims 6 and 18, as described above, Stone discloses most of the claimed invention except for indicating that the sabot comprises a high density polyethylene.

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However, Dippold et al. teaches a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a sabot (12) made out of polyethylene (see lines 39-41 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include the use of a polyethylene sabot, in a similar manner as taught in Dippold et al., since using polyethylene sabot would allow the sabot to be compressed when the slug is loaded into the barrel/round and thus provide a snug fit without undesired bulging.

For claim 10, as described above, Stone discloses most of the claimed invention except for indicating that the nose of the slug includes a nose cavity. However, Dippold et al. teaches a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a slug (10) includes a nose cavity/recess (26) thereon. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include a nose cavity/recess in the slug, in a similar manner as taught in Dippold et al., since to do so would allow the forming of spaced petals which curl outwardly and rearwardly; thus, increasing the outer diameter of the slug so that it enhances the cutting and tearing action of the slug as it passes through the target.

For claim 15, as described above, Stone discloses most of the claimed invention except for indicating that the slug comprises at least about 95% by weight lead.

However, Dippold et al. teaches a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a slug includes at least about 95% by weight lead (see lines 30-33 of col. 2). It would have been obvious to one having ordinary skill in

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the art at the time the invention was made to have modified the firearm round of Stone so as to include a slug having at least about 95% by weight lead, in a similar manner as taught in Dippold et al., since using lead slug (note that lead is a dense and/or heavy metallic element which has high specific gravity) would increase the penetration potential to a target and thus provide more damage to the target.

For claim 16, as described above, Stone discloses most of the claimed invention except for indicating that the slug comprises antimony. However, Dippold et al. teaches a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a slug comprises antimony (see lines 30-33 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include a slug made out of antimony, in a similar manner as taught in Dippold et al., since using antimony in combination with lead in slug would greatly increase the mechanical strength and hardness of lead and thus would produce a hard and strong slug which would cause more damage to the target.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6,073,560) in view of Stevens (US 5,361,701).

As described above, Stone discloses most of the claimed invention except for indicating that the slug is plated or jacketed.

Stevens teaches a similar firearm round as that of Stone in which Stevens' firearm round having a plated or jacketed slug (137 and 237 in Figures 3 & 4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include the use of a plated or

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jacketed slug, in a similar manner as taught in Stevens, since to do so would serve to prevent the lead slug from rubbing onto and clogging the rifling and to maintain the integrity in the shape of the slug.

8. Claims 22, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6,073,560) in view of Gualandi (US 6,481,356) and of Hoffman (US 4,939,997).

Stone discloses most of the claimed invention except for indicating that (1) the post integrally formed within the payload receiving chamber and (2) a locking ring residing within the payload receiving chamber.

Regarding (1), Gualandi teaches a similar firearm round as that of Stone in which Gualandi's firearm round having the payload receiving chamber includes a post (8,9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include the payload receiving chamber having a post, in a similar manner as taught in Gualandi, since to do so would provide for a gyroscopic stability and a mechanism actuating a high thrust pulse centering effect.

Regarding (2), Hoffman teaches a similar firearm round as that of Stone in which Hoffman's firearm round having a projectile/slug (6) mounted within a sabot (1) wherein the sabot further comprises the use of a locking ring (7) so as to engage the projectile/slug therein (see Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone so as to include the use of a locking ring for the engagement of the

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projectile/slug within the sabot, in a similar manner as taught in Hoffman, since to do so would provide the locking ring as a securing device under centrifugal force and in response to the spin acting on the projectile/slug the locking ring will expand to facilitate the projectile/slug exiting from the sabot.

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6,073,560) in view of Gualandi (US 6,481,356) and of Hoffman (US 4,939,997) (hereinafter is referred to as Stone as modified by Gualandi and Hoffman), and further in view of Dippold et al. (US 5,263,418).

Stone as modified by Gualandi and Hoffman discloses most of the claimed invention except for indicating that the sabot comprises a high-density polyethylene, low-density polyethylene, and combinations thereof.

Dippold et al. teaches a similar firearm round as that of Stone as modified by Gualandi and Hoffman in which Dippold et al.'s firearm round having a sabot (12) made out of polyethylene (see lines 39-41 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone as modified by Gualandi and Hoffman so as to include the use of a polyethylene sabot, in a similar manner as taught in Dippold et al., since using polyethylene sabot would allow the sabot to be compressed when the slug is loaded into the barrel/round and thus provide a snug fit without undesired bulging.

10. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6,073,560) in view of Gualandi (US 6,481,356), and further in view of Dippold et al. (US 5,263,418).

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As described above, Stone as modified by Gualandi discloses most of the claimed invention except for indicating that the slug comprises at least about 95% by weight lead. However, Dippold et al. teaches a similar firearm round as that of Stone as modified by Gualandi in which Dippold et al.'s firearm round having a slug includes at least about 95% by weight lead (see lines 30-33 of col. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the firearm round of Stone as modified by Gualandi so as to include a slug having at least about 95% by weight lead, in a similar manner as taught in Dippold et al., since using lead slug (note that lead is a dense and/or heavy metallic element which has high specific gravity) would increase the penetration potential to a target and thus provide more damage to the target.

## (10) Response to Argument

Appellant argues that Stone fails to teach or suggest a compression section and a plurality of fins or alternating ridges on an interior and exterior surfaces as set forth in claims 1, 4, 7, 8, and 20, the Examiner disagrees. As broadly claimed by the Appellant, it is noted that a fair reading of the claim language permits the Examiner to interpret that Stone's section (214,212) can be considered as a compression section since the diameter around this section is smaller or more compressed than the diameter of the rest of other section (i.e., the diameter from section 212 to 214 is smaller or more compressed than the diameter from section 214 to 216) and Stone's section (220,221,223) can be considered as a plurality of fins or alternating ridges on an interior

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and exterior surfaces since Stone's section (220,221,223) defined by a combination of alternating ridges (223,220) on an interior and an exterior surface.

Appellant further argues that Stone fails to teach or suggest a firearm round that substantially remains intact upon firing as set forth in claims 1, 4, 7, 8, and 20, the Examiner disagrees. It is noted that the features upon which applicant relies (i.e., a firearm round that substantially remains intact upon firing) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Appellant further argues that Hoffman fails to teach or suggest a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof as set forth in claims 2 and 19, the Examiner agrees. However, as described above in paragraph #4 under heading "(9) Grounds of Rejection", the reference Hoffman was merely cited as a secondary reference to show the teaching of "a firearm round having a projectile/slug mounted within a sabot wherein the sabot further comprises the use of a locking ring so as to engage the projectile/slug therein" and not to show the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" (it is noted that the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" was shown in the primary reference Stone).

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Appellant further argues that Gualandi fails to teach or suggest a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof as set forth in claims 3, 9, 11-14, and 27-30, the Examiner agrees. However, as described above in paragraph #5 under heading "(9) Grounds of Rejection", the reference Gualandi was merely cited as a secondary reference to show the teaching of (1) "a firearm round having the payload receiving chamber includes a post" and (2) "a firearm round having the slug comprises a nose, a driving band adjacent the nose and a stem connected to the driving band, and wherein the stem of the slug includes a post cavity, and wherein the payload receiving chamber of the sabot includes a post fitted within the post cavity of the slug, and wherein the stem has a diameter less than a diameter of the driving band" and not to show the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" (it is noted that the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" was shown in the primary reference Stone).

Appellant further argues that Dippold fails to teach or suggest a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof as set forth in claims 6, 10, 15, 16 and 18, the Examiner agrees. However, as described above in paragraph #6 under heading "(9) Grounds of Rejection", the reference Dippold was merely cited as a secondary reference to show the teaching of (1) "the sabot comprises a high density polyethylene",

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(2) "a firearm round having a slug includes a nose cavity/recess thereon", (3) "a firearm round having a slug includes at least about 95% by weight lead", (4) "a slug comprises antimony" and not to show the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" (it is noted that the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" was shown in the primary reference Stone).

Appellant further argues that Stevens fails to teach or suggest a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof as set forth in claim 17, the Examiner agrees. However, as described above in paragraph #7 under heading "(9) Grounds of Rejection", the reference Stevens was merely cited as a secondary reference to show the teaching of "a firearm round having a plated or jacketed slug" and not to show the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" (it is noted that the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" was shown in the primary reference Stone).

Appellant further argues that Gualandi nor Hoffman nor Dippold fails to teach or suggest a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof as set forth in claims 22, 23, 26, 25, and 31, the Examiner agrees. However, as described above in paragraph

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#'s 8-10 under heading "(9) Grounds of Rejection", the reference Gualandi was merely cited as a secondary reference to show the teaching of "a firearm round having the payload receiving chamber includes a post" and the reference Hoffman was merely cited as a secondary reference to show the teaching of "a firearm round having a projectile/slug mounted within a sabot wherein the sabot further comprises the use of a locking ring so as to engage the projectile/slug therein" and the reference Dippold was merely cited as a secondary reference to show the teaching of (1) "the sabot comprises a high density polyethylene" and (2) "a firearm round having a slug includes at least about 95% by weight lead" and not to show the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" (it is noted that the teaching of "a compression section and a plurality of fins defined by a combination of alternating ridges on an interior and an exterior surface thereof" was shown in the primary reference Stone).

Finally, in response to Appellant's argument that none of the cited references (i.e., Hoffman, Gualandi, Dippold, or Stevens), alone or in combination, supplement the deficiencies of Stone. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In response, the Examiner maintains that there is motivation to combine the references.

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Hoffman stands for the basic premise of teaching a similar firearm round as that of Stone in which Hoffman's firearm round having a projectile/slug mounted within a sabot wherein the sabot further comprises the use of a locking ring so as to engage the projectile/slug therein. One of ordinary skill in the art would indeed modify the firearm round of Stone so as to include the use of a locking ring for the engagement of the projectile/slug within the sabot, in a similar manner as taught in Hoffman, since to do so would provide the locking ring as a securing device under centrifugal force and in response to the spin acting on the projectile/slug the locking ring will expand to facilitate the projectile/slug exiting from the sabot.

Gualandi stands for the basic premise of teaching a similar firearm round as that of Stone in which Gualandi's firearm round having the payload receiving chamber includes a post. One of ordinary skill in the art would indeed modify the firearm round of Stone so as to include the payload receiving chamber having a post, in a similar manner as taught in Gualandi, since to do so would provide for a gyroscopic stability and a mechanism actuating a high thrust pulse centering effect.

Gualandi further stands for the basic premise of teaching a similar firearm round as that of Stone in which Gualandi's firearm round having the slug comprises a nose, a driving band adjacent the nose and a stem connected to the driving band, and wherein the stem of the slug includes a post cavity, and wherein the payload receiving chamber of the sabot includes a post fitted within the post cavity of the slug, and wherein the stem has a diameter less than a diameter of the driving band. One of ordinary skill in the art would indeed modify the firearm round of Stone so as to include the firearm

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round having the slug comprises a nose, a driving band adjacent the nose and a stem connected to the driving band, and wherein the stem of the slug includes a post cavity, and wherein the payload receiving chamber of the sabot includes a post fitted within the post cavity of the slug, in a similar manner as taught in Gualandi, since to do so would provide for a gyroscopic stability as well as a high thrust pulse centering effect.

Dippold stands for the basic premise of teaching a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a sabot made out of polyethylene. One of ordinary skill in the art would indeed modify the firearm round of Stone so as to include the use of a polyethylene sabot, in a similar manner as taught in Dippold et al., since using polyethylene sabot would allow the sabot to be compressed when the slug is loaded into the barrel/round and thus provide a snug fit without undesired bulging.

Dippold further stands for the basic premise of teaching a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a slug includes a nose cavity/recess thereon. One of ordinary skill in the art would indeed modify the firearm round of Stone so as to include a firearm round having a nose cavity/recess in the slug, in a similar manner as taught in Dippold et al., since to do so would allow the forming of spaced petals which curl outwardly and rearwardly; thus, increasing the outer diameter of the slug so that it enhances the cutting and tearing action of the slug as it passes through the target.

Dippold further stands for the basic premise of teaching a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a slug includes at least about 95% by weight lead. One of ordinary skill in the art would indeed modify the

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firearm round of Stone so as to include a firearm round having a slug having at least about 95% by weight lead, in a similar manner as taught in Dippold et al., since using lead slug (note that lead is a dense and/or heavy metallic element which has high specific gravity) would increase the penetration potential to a target and thus provide more damage to the target.

Dippold further stands for the basic premise of teaching a similar firearm round as that of Stone in which Dippold et al.'s firearm round having a slug comprises antimony. One of ordinary skill in the art would indeed modify the firearm round of Stone so as to include the firearm round having a slug made out of antimony, in a similar manner as taught in Dippold et al., since using antimony in combination with lead in slug would greatly increase the mechanical strength and hardness of lead and thus would produce a hard and strong slug which would cause more damage to the target.

Stevens stands for the basic premise of teaching a similar firearm round as that of Stone in which Stevens' firearm round having a plated or jacketed slug. One of ordinary skill in the art would indeed modify the firearm round of Stone so as to include the firearm round having a plated or jacketed slug, in a similar manner as taught in Stevens, since to do so would serve to prevent the lead slug from rubbing onto and clogging the rifling and to maintain the integrity in the shape of the slug.

### (11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

Trinh Nguyen, Primary Ex. of AU3644

Conferees:

Teri Luu, SPE of AU3644 TV

Son Nguyen, Primary Ex. of AU3643